Claims:

1. A method of automatically controlling the filling of a plurality of tanks with a liquid from a supply source, the plurality of tanks being equipped with overflow sensing means that detects an overflow condition indicative of the plurality of tanks being filled to capacity, said method comprising the

steps of:

coupling a controllable valve to the supply source wherein the liquid dispensed therefrom must pass through said controllable valve when the plurality of tanks are being filled;

providing an increment that said controllable valve can be opened and closed when liquid is being dispensed therethrough;

opening said controllable valve to an initial position, wherein said initial position defines a flow rate through said controllable valve that falls within a range of acceptable flow rates;

dispensing the liquid from the supply source through said controllable valve in said initial position;

monitoring, for an amount of time, each of (i) a flow rate of the liquid being dispensed, (ii) a level of the liquid in each of the plurality of tanks, and (iii) a state

of the overflow sensing means, wherein (i) an average flow rate, (ii) an average level, and (iii) an average state, respectively, are defined for said amount of time;

moving said controllable valve by said increment when said average flow rate is outside said range of acceptable flow rates, wherein said controllable valve is closed by an amount equal to said increment when said average flow rate is greater than said range, and wherein said controllable valve is opened by an amount equal to said increment when said average flow rate is less than said range;

waiting a predetermined wait time following an occurrence of said step of moving; and

initiating a finalize filling process when one of a number of events occurs, said number of events including (i) said average level being equal to a predetermined percentage of the capacity of the plurality of tanks, and (ii) said average state indicating said overflow condition, said finalize filling process fully closing said controllable valve in accordance with a series of discrete movements of said controllable valve carried out over a specified time period; and

repeating said steps of monitoring, moving and waiting until one of said number of events occurs.

2. A method according to claim 1 wherein said predetermined wait time used in said step of waiting is equal to the sum of (i) a first time interval equal to the time needed for said controllable valve to move said increment, and (ii) a second time interval selected to allow said flow rate to settle out after said controllable valve moves said increment.

3. A method according to claim 1 wherein

the plurality of tanks are part of a seawater-compensated system with the plurality of tanks being coupled together in a series configuration,

the supply source is coupled to a first tank in the series configuration via said controllable valve, and

prior to said step of repeating, said method further comprises the steps of:

monitoring, for said amount of time, pressure in one of the plurality of tanks wherein an average pressure is defined for said amount of time;

closing said controllable valve by an amount equal to said increment when said average pressure exceeds a pressure threshold; and

waiting said predetermined wait time following an occurrence of said step of closing.

4. A method according to claim 1 wherein

the plurality of tanks are part of a seawater-compensated system with the plurality of tanks being coupled together in a series configuration,

the supply source is coupled to a first tank in the series configuration via said controllable valve and an overflow reservoir is coupled to a last tank in the series configuration with the overflow reservoir having an orifice through which seawater flows when the liquid is being dispensed to fill the plurality of tanks, and

said step of monitoring said flow rate comprises the step of monitoring the seawater passing through the orifice of the overflow reservoir.

5. A method according to claim 4 wherein the overflow sensing means is coupled to the overflow reservoir, wherein said step of monitoring said state of the overflow sensing means comprises the step of using the overflow sensing means to check for presence of the liquid in the overflow reservoir wherein said presence of the liquid is indicative of said overflow condition.

6. A method according to claim 1 wherein a supply manifold is coupled between said controllable valve and the plurality of tanks, wherein said step of monitoring said flow rate is carried out between said controllable valve and the supply manifold.

7. A method according to claim 6 wherein

an overflow reservoir is coupled to the supply manifold with the overflow sensing means coupled to the overflow reservoir, and

said step of monitoring said state of the overflow sensing means comprises the step of using the overflow sensing means to check for presence of the liquid in the overflow reservoir wherein said presence of the liquid is indicative of said overflow condition.

8. A method of automatically controlling the filling of a ship's fuel tanks with fuel from a supply source, the fuel tanks being equipped with overflow sensing means that detects an overflow condition indicative of the fuel tanks being filled to capacity, said method comprising the steps of:

coupling a controllable valve to the supply source wherein the liquid dispensed therefrom must pass through said controllable valve when the plurality of tanks are being filled;

providing an increment that said controllable valve can be opened and closed when liquid is being dispensed therethrough;

opening said controllable valve to an initial position, wherein said initial position defines a flow rate through said controllable valve that falls within a range of acceptable flow rates;

dispensing the liquid from the supply source through said controllable valve in said initial position;

monitoring, for an amount of time, each of (i) a flow rate of the liquid being dispensed, (ii) a level of the liquid in each of the plurality of tanks, and (iii) a state of the overflow sensing means, wherein (i) an average flow rate, (ii) an average level, and (iii) an average state,

respectively, are defined for said amount of time;

moving said controllable valve by said increment when said average flow rate is outside said range of acceptable flow rates, wherein said controllable valve is closed by an amount equal to said increment when said average flow rate is greater than said range, and wherein said controllable valve is opened by an amount equal to said increment when said average flow rate is less than said range;

waiting a predetermined wait time following an occurrence of said step of moving, said predetermined wait time being equal to the sum of (i) a first time interval equal to the time needed for said controllable valve to move said increment, and (ii) a second time interval based on a plurality of factors to include the number of fuel tanks and location of said controllable valve relative to where said flow rate is being monitored; and

initiating a finalize filling process when one of a number of events occurs, said number of events including (i) said average level being equal to a predetermined percentage of the capacity of the fuel tanks, and (ii) said average state indicating said overflow condition, said finalize filling process fully closing said controllable valve in accordance with a series of discrete movements of said controllable valve carried out over a specified time period;

and

repeating said steps of monitoring, moving and waiting until one of said number of events occurs.

9. A method according to claim 8 wherein

the fuel tanks are part of a seawater-compensated system with the fuel tanks being coupled together in a series configuration,

the supply source is coupled to a first tank in the series configuration via said controllable valve, and

prior to said step of repeating, said method further comprises the steps of:

monitoring, for said amount of time, pressure in one of the fuel tanks wherein an average pressure is defined for said amount of time;

closing said controllable valve by an amount equal to said increment when said average pressure exceeds a pressure threshold; and

waiting said predetermined wait time following an occurrence of said step of closing.

10. A method according to claim 8 wherein

the fuel tanks are part of a seawater-compensated system with the fuel tanks being coupled together in a series configuration,

the supply source is coupled to a first tank in the series configuration via said controllable valve and an overflow reservoir is coupled to a last tank in the series configuration with the overflow reservoir having an orifice through which seawater flows when the liquid is being dispensed to fill the plurality of tanks, and

said step of monitoring said flow rate comprises the step of monitoring the seawater passing through the orifice of the overflow reservoir.

11. A method according to claim 10 wherein the overflow sensing means is coupled to the overflow reservoir, wherein said step of monitoring said state of the overflow sensing means comprises the step of using the overflow sensing means to check for presence of fuel in the overflow reservoir wherein said presence of fuel is indicative of said overflow condition.

12. A method according to claim 8 wherein a supply manifold is coupled between said controllable valve and the fuel tanks, wherein said step of monitoring said flow rate is carried out between said controllable valve and the supply manifold.

13. A method according to claim 12 wherein

an overflow reservoir is coupled to the supply manifold with the overflow sensing means coupled to the overflow reservoir, and

said step of monitoring said state of the overflow sensing means comprises the step of using the overflow sensing means to check for presence of fuel in the overflow reservoir wherein said presence of fuel is indicative of said overflow condition.